2008 Annual Survey of the Mathematical Sciences in the United States

(Second Report)

Updated Report on the 2007–2008 Doctoral Recipients
Starting Salary Survey of the 2007–2008 Doctoral Recipients

Polly Phipps, James W. Maxwell, and Colleen A. Rose

Update on the 2007–2008 Doctoral Recipients

This Second Report of the 2008 Annual Survey gives an update of the 2007–2008 new doctoral recipients from the First Report, which appeared in the *Notices of the AMS* in February 2009, pages 257–67. The First Report contains a section on new doctoral recipients in statistics that is not updated here.

The 2008 Annual Survey represents the fifty-second in an annual series begun in 1957 by the American Mathematical Society. The 2008 Survey is under the direction of the Data Committee, a joint committee of the American Mathematical Society, the American Statistical Association, the Institute of Mathematical Statistics, the Mathematical Association of America, and the Society of Industrial and Applied Mathematics. The current members of this committee are Richard Cleary, Richard M. Dudley, John W. Hagood, Abbe H. Herzig, Ellen Kirkman, David J. Lutzer, Joanna Mitro, James W. Maxwell (ex officio), Bart Ng, Polly Phipps (chair), Douglas Ravanel, Jianguo (Tony) Sun, and Marie Vitulli. The committee is assisted by AMS survey analyst Colleen A. Rose. Comments or suggestions regarding this Survey Report may be directed to the committee.

Introduction

The Annual Survey of the Mathematical Sciences collects information each year about degree recipients, departments, faculties, and students in the mathematical sciences at four-year colleges and universities in the United States. Information about recipients of doctoral degrees awarded between July 1, 2007, and June 30, 2008, was collected from doctorate-granting departments beginning in late spring 2008. The "2008 Annual Survey First Report" (*Notices*, February 2009, pages 257–67) presented survey results about 1,235 new doctoral recipients based on the data provided by the departments. Here we update this information using data obtained from 557 new doctoral recipients who responded to a questionnaire, "Employment Experiences of New Doctoral Recipients" (EENDR), sent in early October 2008 to all new doctoral recipients. In addition, this report incorporates information on an additional 143 doctoral recipients from departments that responded too late to have the information included in the First Report. Finally, we present the starting salaries and other employment information from the new doctoral recipients that responded to the EENDR questionnaire.

The names and thesis titles of the 2007–2008 doctoral recipients reported on in the First Report were published in "Doctoral Degrees Conferred" (Notices, February 2009, pages 281–301). A supplemental listing of the 143 additional new

Doctorates Granted Departmental Response Rates (updated April 2008)

Group I (Pu)[1]	25 of 25 including	0 with no degrees
Group I (Pr)	23 of 23 including	0 with no degrees
Group II	56 of 56 including	3 with no degrees
Group III	73 of 73 including	18 with no degrees
Group IV	65 of 89 including	4 with no degrees
Group Va	21 of 21 including	1 with no degrees

[1] For definitions of groups see page 839.

Polly Phipps is a senior research statistician with the Bureau of Labor Statistics. James W. Maxwell is AMS associate executive director for special projects. Colleen A. Rose is AMS survey analyst.

Highlights

There were 1,378 doctoral recipients from U.S. institutions for 2007–2008, up 45 (3%) from the previous year, continuing an upward trend that began in 2002–2003. This is the highest number of new Ph.D.'s ever reported. An increase in response rate for the second report is partly responsible for the increase.

The final unemployment rate was 3.8% for all 2007–2008 doctoral recipients and 2.3% for females. Both percentages reflect increases over last year's percentages (2.4% and 1.5%, respectively) which where the lowest reported since the early 1990s.

The number of new doctoral recipients who are U.S. citizens is 622, up 46 (8%) from last year's number and 163 (36%) from 2003–2004. This is the highest number of U.S. citizens reported over the past eleven surveys. The percentage of U.S. citizens among all doctoral recipients is 44%, up from 43% last year. The number of new doctoral recipients who are not U.S. citizens remains stable at 756, but up 134 (22%) from 2003–2004.

Females totaled 435 (32%) of all new doctoral recipients, down in number and percentage from 446 (33%) last year. The highest percentage of females among the annual counts of doctoral recipients was 34%, reported for 1998–1999. Of the 540 U.S. citizen new doctoral recipients, 191 are female (31%).

Of the 576 U.S. citizen new doctoral recipients this year, 9% are underrepresented minorities compared to 6% last year.

Of the 1,221 new doctoral recipients whose employment status is known, 1,166 reported having employment in fall 2008, with 88% (1,026) finding employment in the U.S., the same as last year. Non-U.S. citizens accounted for 50% of those employed in the U.S. (last year this percentage was 52%). The percentage of non-U.S. citizens employed in the U.S. has declined three consecutive years.

The number of new doctoral recipients hired into U.S. academic positions in fall 2008 remains stable at 756. Although this year's number remains stable, it is still the highest such number reported over the past twenty-six years. Indeed, each of the numbers reported for the past four falls exceeds any number reported during the period from fall 1982 through fall 2004.

The number of new doctoral recipients taking positions in U.S. business/industry and government was 270 in fall 2008, a 5% increase from last year's numbers. This group constitutes 26% of all the new doctoral recipients employed in the U.S. (up from 25% last year).

There were 557 new doctoral recipients responding to the EENDR survey; of the 496 who found employment in the U.S., 49% reported obtaining a permanent position (down from 53% in fall 2006).

The percentage of temporarily employed respondents who reported taking a postdoctoral position in the U.S. increased from 76% in fall 2007 to 77% in fall 2008, but the number remained unchanged at 172.

Table 1A: Doctoral Recipients: Preliminary and Final Counts

Year	Preliminary	Final
1998–1999	1133	1135
1999–2000	1119	1127
2000–2001	1008	1065
2001–2002	948	960
2002–2003	1017	1037
2003–2004	1041	1081
2004–2005	1116	1222
2005–2006	1245	1311
2006–2007	1157	1333
2007–2008	1235	1378

Table 1B: Doctoral Recipients: Citizenship

Year	U.S.	Non-U.S.	TOTAL
2003-2004	459	622	**1081**
2004-2005	496	726	**1222**
2005-2006	552	759	**1311**
2006-2007	576	757	**1333**
2007-2008	622	756	**1378**

Table 1C: 2007–2008 Doctoral Recipients by Type of Degree-Granting Department

	Department Group[1]					
	I (Pu)	I (Pr)	II	III	IV	Va
Number	315	176	301	152	317	117
Percent	23%	13%	22%	11%	23%	8%

[1] For definitions of groups see page 839.

Table 1D: Doctoral Recipients: U.S. Citizens—Percent Female and Percent Underrepresented Minorities

Year	U.S.	% Female	% URM*
1998-1999	560	34%	5%
1999-2000	566	29%	5%
2000-2001	532	31%	7%
2001-2002	428	30%	6%
2002-2003	499	32%	6%
2003-2004	459	33%	7%
2004-2005	496	28%	7%
2005-2006	552	28%	8%
2006-2007	576	31%	6%
2007-2008	622	31%	9%

* Percentage of underrepresented minorities calculated using Gender, Race/Ethnicity and Citizenship data gathered from granting departments.

Table 2A: Fall 2008 Employment Status of 2007–2008 Doctoral Recipients by Field of Thesis (updated April 2009)

TYPE OF EMPLOYER		FIELD OF THESIS												TOTAL
		Algebra Number Theory	Real, Comp., Funct., & Harmonic Analysis	Geometry/ Topology	Discr. Math./ Combin./ Logic/ Comp. Sci.	Probability	Statistics/ Biostat.	Applied Math.	Numerical Analysis/ Approxi-mations	Linear Nonlinear Optim./ Control	Differential, Integral, & Difference Equations	Math. Educ.	Other/ Unknown	
Group I (Public)[1]		33	7	15	4	4	0	6	7	3	10	0	1	**90**
Group I (Private)		22	3	17	5	6	3	10	1	0	8	0	0	**75**
Group II		15	14	9	7	2	3	9	5	2	13	2	1	**82**
Group III		16	2	2	1	2	9	4	3	2	1	5	0	**47**
Group IV		0	0	0	0	2	39	2	0	0	0	0	0	**43**
Group Va		0	0	0	2	0	0	8	3	0	1	0	0	**14**
Master's		10	4	5	11	1	13	3	7	2	6	6	0	**68**
Bachelor's		37	11	18	20	3	13	22	3	4	17	4	0	**152**
Two-Year College		3	4	4	3	0	1	5	1	0	4	1	0	**26**
Other Academic Dept.[2]		9	2	1	6	2	64	27	5	0	5	3	0	**124**
Research Institute/ Other Nonprofit		2	0	1	3	2	16	6	2	0	2	0	1	**35**
Government		0	0	2	2	1	24	8	1	1	2	0	0	**41**
Business and Industry		17	7	10	12	21	111	26	12	5	6	0	2	**229**
Non-U.S. Academic		19	8	17	11	5	17	24	1	3	14	0	0	**119**
Non-U.S. Nonacademic		4	0	1	1	2	8	0	4	0	1	0	0	**21**
Not Seeking Employment		2	0	0	0	0	4	1	0	0	2	0	0	**9**
Still Seeking Employment		10	4	5	4	2	6	6	1	0	7	0	1	**46**
Unknown (U.S.)		12	4	5	5	3	25	16	9	2	10	0	1	**92**
Unknown (non-U.S.)[3]		8	2	9	7	3	17	8	5	0	5	0	1	**65**
TOTAL		**219**	**72**	**121**	**104**	**61**	**373**	**191**	**70**	**24**	**114**	**21**	**8**	**1378**
Column Subtotals	Male	172	55	95	76	54	182	136	56	20	79	10	8	**943**
	Female	47	17	26	28	7	191	55	14	4	35	11	0	**435**

[1] For definitions of groups see page 839.
[2] These are departments outside the mathematical sciences.
[3] Includes those whose status is reported as "unknown" or "still seeking employment".

Table 2B: Fall 2008 Employment Status of 2007–2008 Doctoral Recipients by Type of Degree-Granting Department (updated April 2009)

TYPE OF EMPLOYER		TYPE OF DOCTORAL DEGREE-GRANTING DEPARTMENT						TOTAL	Row Subtotals	
		Group I (Public)	Group I (Private)	Group II Math.	Group III Math.	Group IV Statistics	Group Va Applied Math.		Male	Female
Group I (Public)[1]		40	21	16	8	0	5	**90**	70	20
Group I (Private)		21	40	5	1	4	4	**75**	60	15
Group II		27	10	30	10	3	2	**82**	62	20
Group III		10	1	15	14	6	1	**47**	32	15
Group IV		0	0	2	1	39	1	**43**	24	19
Group Va		2	3	4	0	0	5	**14**	14	0
Master's		18	3	24	10	12	1	**68**	50	18
Bachelor's		39	9	64	24	9	7	**152**	86	66
Two-Year College		6	1	11	5	1	2	**26**	21	5
Other Academic Dept.[2]		13	5	15	18	55	18	**124**	73	51
Research Institute/ Other Nonprofit		4	4	6	1	16	4	**35**	14	21
Government		9	4	5	1	19	3	**41**	20	21
Business and Industry		35	20	35	23	90	26	**229**	152	77
Non-U.S. Academic		42	27	18	8	16	8	**119**	97	22
Non-U.S. Nonacademic		5	3	3	1	6	3	**21**	18	3
Not Seeking Employment		1	0	1	3	3	1	**9**	1	8
Still Seeking Employment		17	5	11	7	3	3	**46**	37	9
Unknown (U.S.)		10	12	22	12	21	15	**92**	71	21
Unknown (non-U.S.)[3]		16	8	14	5	14	8	**65**	41	24
TOTAL		**315**	**176**	**301**	**152**	**317**	**117**	**1378**	**943**	**435**
Column Subtotals	Male	248	145	215	101	151	83	**943**		
	Female	67	31	86	51	166	34	**435**		

[1] For definitions of groups see page 839.
[2] These are departments outside the mathematical sciences.
[3] Includes those whose status is reported as "unknown" or "still seeking employment".

Table 2C: Degree-Granting Department of 2007–2008 Doctoral Recipients by Field of Thesis (updated April 2009)

TYPE OF DOCTORAL DEGREE-GRANTING DEPARTMENT	FIELD OF THESIS												TOTAL
	Algebra Number Theory	Real, Comp., Funct., & Harmonic Analysis	Geometry/ Topology	Discr. Math./ Combin./ Logic/ Comp. Sci.	Probability	Statistics/ Biostat.	Applied Math.	Numerical Analysis/ Approxi-mations	Linear Nonlinear Optim./ Control	Differential, Integral, & Difference Equations	Math. Educ.	Other/ Unknown	
Group I (Public)[1]	80	22	41	43	16	10	42	15	7	35	0	4	315
Group I (Private)	57	12	32	13	11	0	30	1	1	18	0	1	176
Group II	66	24	34	21	14	15	56	29	5	29	7	1	301
Group III	16	13	9	14	6	21	16	17	5	19	14	2	152
Group IV	0	0	0	0	6	305	6	0	0	0	0	0	317
Group Va	0	1	5	13	8	22	41	8	6	13	0	0	117
TOTAL	219	72	121	104	61	373	191	70	24	114	21	8	1378

[1] For definitions of groups see page 839.

Table 2D: Percentage of Employed New Doctoral Recipients by Type of Employer

	Employed in U.S.		Employed outside. U.S.		NUMBER EMPLOYED
	Academic[1]	Nonacademic	Academic	Nonacademic	
Fall 2004	72%	15%	12%	1%	**910**
Fall 2005	69%	17%	12%	2%	**1018**
Fall 2006	65%	22%	11%	2%	**1099**
Fall 2007	66%	22%	11%	1%	**1151**
Fall 2008	65%	23%	10%	2%	**1166**

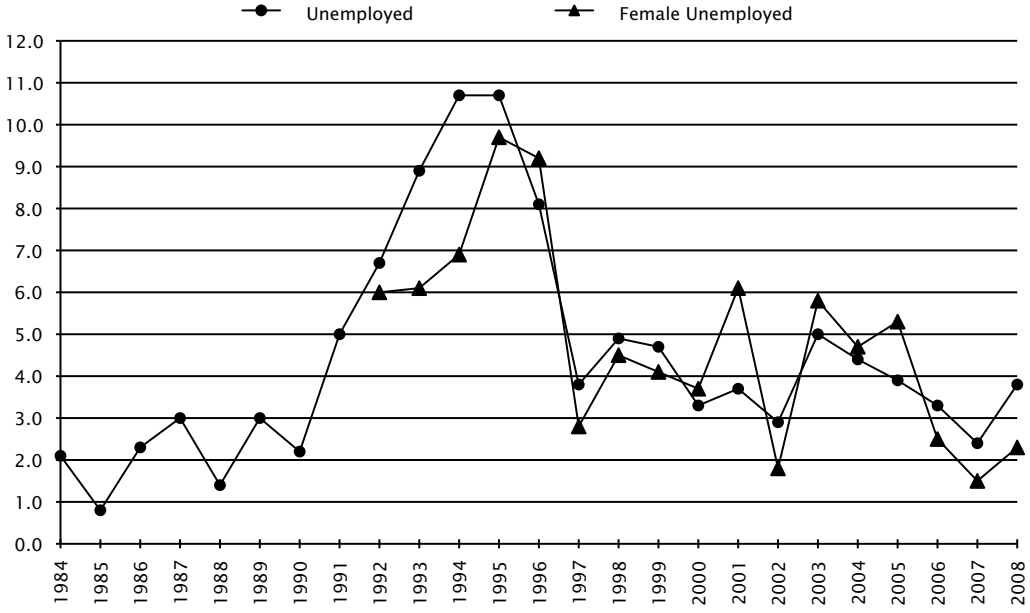
[1] Includes research institutes and other non-profits.

doctoral recipients appears at the end of this report on pages 840–843.

Updated Employment Status of 2007–2008 Doctoral Recipients

The updated response rates for the 2008 Survey of New Doctoral Recipients appear on page 828. The total number of departments responding in time for inclusion in this Second Report was 263, 29 more than were included in the 2008 First Report and 11 more than the total number responding for inclusion in the 2007 Second Report. Groups I, II, III, and Va achieved a 100% response rate by the second report; the Data Committee thanks all departments for their efforts. No adjustments were made in this report for nonresponding departments. Definitions of the various groups surveyed in the Annual Survey can be found on page 839 of this report.

Figure 1: Percentage of New Doctoral Recipients Unemployed[1]



[1] As reported in the respective Annual Survey Second Reports.

Table 3A: New Doctoral Recipients Employed in the U.S.

	Degree-Granting Department Group[1]													
	I (Pu)		I (Pr)		II		III		IV		Va		TOTAL	
	Academic[2]	Business/ Industry & Government	Academic	Business/ Industry & Government	Academic	Business/ Industry & Government	Academic	Business/ Industry & Government	Academic	Business/ Industry & Government	Academic	Business/ Industry & Government	Academic	Business/ Industry & Government
Fall 2004	118	18	118	18	144	17	73	11	150	61	52	11	655	137
Fall 2005	152	21	104	17	152	23	97	18	149	79	45	18	699	176
Fall 2006	171	41	109	21	128	32	93	15	155	104	59	30	715	243
Fall 2007	191	50	91	12	181	20	95	27	151	123	47	24	756	256
Fall 2008	180	44	97	24	192	40	92	24	145	109	50	29	756	270

[1] For definitions of groups see page 839.
[2] Includes research institutes and other non-profits.

Table 1A shows the fall and final counts of doctoral recipients in the mathematical sciences awarded by U.S. institutions in each year from 1998 through 2008. This year the total number of new doctoral recipients is 1,378, up from the previous year by 45. The response rates for Groups I (Pr), II, and III all increased in 2008, thus caution should be taken in interpreting change between 2007 and 2008 for these groups.

Table 1B shows trends in the number of new doctoral recipients for the past five years broken down by U.S. citizens and non-U.S. citizens. This year the number of new doctoral recipients who are U.S. citizens is 622, an increase of 46 (8%) over last year. The number of non-U.S. citizen new doctoral recipients dropped by 1 to 756.

Table 1C gives a breakdown of the 1,378 doctoral degrees awarded in the mathematical sciences between July 1, 2007, and June 30, 2008, by type of degree-granting department.

Table 1D shows the number of U.S. citizens, receiving degrees, the percentage of U.S. citizen females and the percentage of U.S. citizen underrepresented minorities for the years 1998–1999 through 2007–2008. Underrepresented minorities include any person having origins in the categories American Indian or Alaska Native, Black or African American, Hispanic or Latino, and Native Hawaiian or Other Pacific Islander.

Tables 2A, 2B, and 2C display updates of these same numbered tables in the First Report to include the 143 additional doctoral recipients reported too late for inclusion in the First Report. New doctoral recipients are grouped by field of thesis using the Mathematical Reviews 2000 Mathematics Subject Classification list. A complete list of these groups is available on the AMS website at www.ams.org/employment/Thesis_groupings.pdf. At the time of this Second Report, the fall 2008 employment status of 1,221 of the 1,378 doctoral recipients was known.

The fall 2008 unemployment rate for new doctoral recipients, based on information gathered by the time of the Second Report, was 3.8%. Figure 1 presents the fall 1984 through fall 2008 trend

Table 3B: New Doctoral Recipients Employed in U.S. Academic Positions

	Hiring Department Group[1]					
	I–III	IV	Va	M&B	Other[2]	**TOTAL**
Fall 2004	220	66	19	172	178	**655**
Fall 2005	249	53	12	212	173	**699**
Fall 2006	263	73	14	198	167	**715**
Fall 2007	286	44	15	229	182	**756**
Fall 2008	294	43	14	220	185	**756**

[1] For definitions of groups see page 839.
[2] Includes two-year colleges, other academic departments, and research institutes/other nonprofits.

Table 3C: Females as a Percentage of 2007–2008 New Doctoral Recipients

	Department Group[1]							
	I (Pu)	I(Pr)	II	III	IV	Va	M&B	**TOTAL**
% Female								
Produced	21%	18%	29%	34%	52%	29%	-	**32%**
Hired	22%	20%	24%	32%	44%	0%	38%	**30%**

[1] For definitions of groups see page 839.

in the final unemployment rate of new doctoral recipients. The counts on which these rates are determined do not include those new doctoral recipients whose fall employment status was still unknown at the time of the Second Report. This year the number of recipients whose employment status was reported as unknown increased to 157 from 143 last year.

Of the 1,221 new doctoral recipients whose employment is known, 1,026 were employed in the U.S., 140 were employed outside the U.S., 46 were still seeking employment, and 9 were not seeking employment.

Table 2D presents the trend in the percentage of employed new doctoral recipients by type of employer for the last five years. Academic employment includes those employed by research institutes and other nonprofits. Among new doctoral recipients who are employed in the U.S., the percentage taking nonacademic employment

Table 3D: Citizenship of 2007–2008 Male Doctoral Recipients by Fall 2008 Employment Status

TYPE OF EMPLOYER	CITIZENSHIP				TOTAL MALE DOCTORAL RECIPIENTS
	U.S. CITIZENS	NON-U.S. CITIZENS			
		Permanent Visa	Temporary Visa	Unknown Visa	
U.S. Employer	341	38	292	7	**678**
U.S. Academic	270	24	209	3	**506**
Groups[1] I, II, III, and Va	115	7	113	3	**238**
Group IV	10	0	14	0	**24**
Non-Ph.D. Department	138	16	76	0	**230**
Research Institute/Other Nonprofit	7	1	6	0	**14**
U.S. Nonacademic	71	14	83	4	**172**
Non-U.S. Employer	26	1	87	1	**115**
Non-U.S. Academic	25	0	71	1	**97**
Non-U.S. Nonacademic	1	1	16	0	**18**
Not Seeking Employment	0	0	1	0	**1**
Still Seeking Employment	21	2	14	0	**37**
Subtotal	388	41	394	8	**831**
Unknown (U.S.)	42	4	24	1	**71**
Unknown (non-U.S.)[2]	1	0	40	0	**41**
TOTAL	**431**	**45**	**458**	**9**	**943**

[1] For definitions of groups see page 839.
[2] Includes those whose status is reported as "unknown" or "still seeking employment".

Table 3E: Citizenship of 2007–2008 Female Doctoral Recipients by Fall 2008 Employment Status

TYPE OF EMPLOYER	CITIZENSHIP				TOTAL FEMALE DOCTORAL RECIPIENTS
	U.S. CITIZENS	NON-U.S. CITIZENS			
		Permanent Visa	Temporary Visa	Unknown Visa	
U.S. Employer	168	22	152	6	**348**
U.S. Academic	139	11	96	4	**250**
Groups[1] I, II, III, and Va	39	2	28	1	**70**
Group IV	8	0	10	1	**19**
Non-Ph.D. Department	83	8	48	1	**140**
Research Institute/Other Nonprofit	9	1	10	1	**21**
U.S. Nonacademic	29	11	56	2	**98**
Non-U.S. Employer	8	0	15	2	**25**
Non-U.S. Academic	7	0	13	2	**22**
Non-U.S. Nonacademic	1	0	2	0	**3**
Not Seeking Employment	6	1	1	0	**8**
Still Seeking Employment	1	1	7	0	**9**
Subtotal	183	24	175	8	**390**
Unknown (U.S.)	8	2	8	3	**21**
Unknown (non-U.S.)[2]	0	1	22	1	**24**
TOTAL	**191**	**27**	**205**	**12**	**435**

[1] For definitions of groups see page 839.
[2] Includes those whose status is reported as "unknown" or "still seeking employment".

varied significantly by field of thesis. For those whose field of thesis is in the first three columns in Table 2A, the percentage is 12% (up from 7% last year), while the percentage for those with theses in probability or statistics is the highest at 45% (up from 44% last year).

Table 3A shows that the fall 2008 total number of doctoral recipients taking positions in business/industry and government is 270. This number reflects an increase of 5% over last year. Groups I Pr and II increased 100% from last year from 12 to 24 and from 20 to 40, respectively. Table 3B shows that the number of new doctoral recipients taking U.S. academic positions remains unchanged from last year at 756. Doctoral hires into U.S. academic

Table 3F: Number of 2007–2008 New Doctoral Recipients Employed in the U.S. by Citizenship and Type of Employer

U.S. EMPLOYER	CITIZENSHIP		TOTAL
	U.S.	Non-U.S.	
Academic: Groups I–Va	172	179	**351**
Academic: M&B, Other	237	168	**405**
Nonacademic	100	170	**270**
TOTAL	**509**	**517**	**1026**

positions are down slightly in all groups except Groups I-III (up to 294 from 286 last year) and Other (up to 185 from 182 last year). The biggest percentage decrease is in Group M&B (4%).

Table 3C gives information about the production of female new doctoral recipients in the doctoral-granting departments and the hiring of females by all department groups. From Table 3C we see that the percentage of females hired ranges from a high of 44% in Group IV, followed by Group M&B at 38% to zero in Group Va. The percentage of female new doctoral recipients produced is highest in Group IV (52%).

Updated Information about 2007–2008 Doctoral Recipients by Gender and Citizenship

Tables 3D and 3E show the gender and citizenship of the 1,378 new doctoral recipients and the fact that 1,026 new doctoral recipients found jobs in the U.S. this year. This is 84% of the 1,221 new doctoral recipients whose employment status was known and 88% of the 1,166 known to have jobs in fall 2008. Last year these percentages were 85% and 88%, respectively.

Gender and citizenship are known for all of the 1,378 new doctoral recipients. The final count of new doctoral recipients who are U.S. citizens is 622 (45%) (up from 43% last year). Pages 262–65 of the First Report present further information related to the citizenship of the 2007–2008 new doctoral recipients.

Of the 622 U.S. citizen new doctoral recipients reported for 2007–2008, 191 are female and 431 are male. Females accounted for 31% of the U.S. citizen total (the same as last year). The number of female U.S. citizens has increased by 11 from last year's count of 180, and the number of male U.S. citizens increased by 35 from last year's count of 396.

Table 3F shows that U.S. citizens accounted for 50% of those employed in the U.S. (up from 48 % last year). Groups I through Va hired 49% U.S. citizens, while groups M, B, and all other academic departments hired 59% U.S. citizens (last year these percentages were 49% and 55%, respectively). U.S. citizens represented 37% of those hired into nonacademic positions (last year 36%). Among all the 1,026 new 2007–2008 doctoral recipients employed in the U.S., 26% took nonacademic employment (government or business and industry) up from 25% last year.

Table 4A: Number (and Percentage) of Annual EENDR Respondents Employed in the U.S. by Job Status

	Employed in U.S.					
	Permanent Total	Temporary Total	Temporary			Unknown
			Permanent not available	Postdoctoral		
				Total	Permanent not available	
Fall 2004	220(49%)	229(51%)	81(35%)	176(77%)	49(28%)	--
Fall 2005	291(56%)	232(44%)	92(40%)	172(74%)	55(32%)	--
Fall 2006	289(51%)	274(49%)	98(36%)	209(76%)	57(27%)	--
Fall 2007	259(53%)	227(47%)	88(39%)	172(76%)	57(33%)	--
Fall 2008	245(49%)	222(45%)	74(33%)	172(77%)	47(27%)	--

Table 4B: Percentage of Annual EENDR Respondents Employed in the U.S. by Employment Sector within Job Status

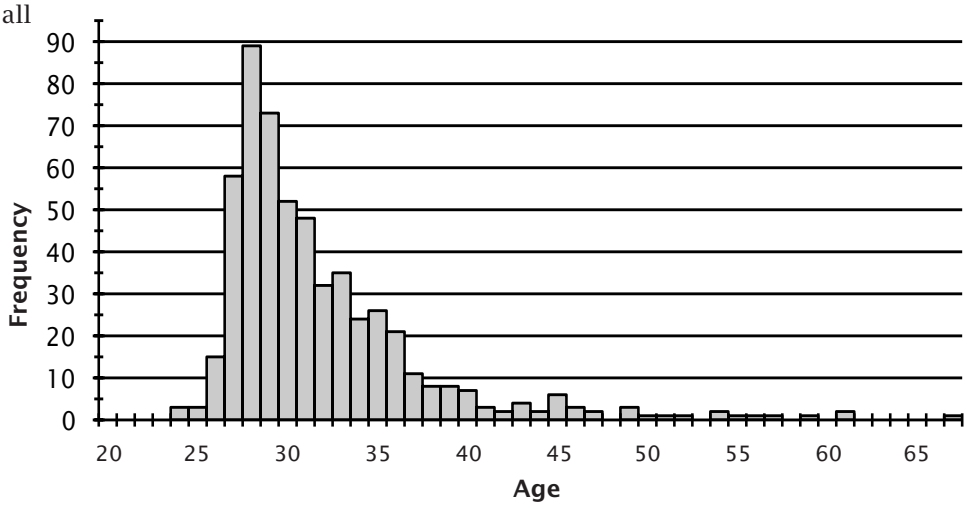
	Employed in U.S.					
	Permanent			Temporary		
	Academic[1]	Government	Business/ Industry	Academic	Government	Business/ Industry
Fall 2004	72%	5%	23%	97%	3%	0%
Fall 2005	68%	5%	27%	96%	4%	0%
Fall 2006	66%	4%	30%	93%	5%	2%
Fall 2007	68%	3%	29%	93%	4%	3%
Fall 2008	63%	6%	31%	95%	4%	1%

[1] Includes research institutes and other non-profits.

New Information from the EENDR Survey

The 1,235 new doctoral recipients reported in the First Report were sent the "Employment Experiences of New Doctoral Recipients" (EENDR) survey in October 2008, and 557 (45%) responded. The response rates varied considerably among the various subgroups of new doctoral recipients defined by their employment status as reported by

Figure 2: Age Distribution of 2007–2008 EENDR Respondents



departments. Among those who were employed the highest response rate, 57%, was from those employed in the U.S. academic, while the lowest, 20%, was from those in non-U.S. academic.

The EENDR gathered details on employment experiences not available through departments. The remainder of this section presents additional information available on this subset of the 2007–2008 doctoral recipients.

Table 4A gives the numbers and percentages of EENDR respondents taking permanent and temporary positions in the U.S for fall 2004 through fall 2008.

This year we see that among the 496 employed in the U.S., 245 reported obtaining a permanent position and 222 a temporary position. (Twenty-nine individuals did not classify their position.) While these numbers both reflect a decrease, the percentage of individuals taking permanent positions in 2008 has decreased to 49% from 53% in 2007, and the percentage of those taking temporary positions has decreased to 45% from 47%. Of the 222 in temporary positions, 74 (33%) reported taking temporary employment because a suitable permanent position was not available, down from 39% in 2007. Most respondents classified their temporary position as postdoctoral (77%). Of the 172 respondents taking postdoctal positions, 47 (27%) reported that a suitable permanent position was not available, down from 33% in 2007.

Table 4B shows the employment trends of permanent and temporary positions broken down by sector for the last five years. Among the 245 who reported obtaining a permanent position in the U.S. in fall 2008, 63% were employed in academia (including 2% in research institutes and other nonprofits), 6% in government, and 31% in business or industry. Women held 37% of the permanent positions.

Among the 222 individuals with temporary employment in the U.S. this year, 95% were employed in academia (including 7% in research institutes and other nonprofits), 4% in government, and 1% in business or industry.

Figure 2 gives the age distribution of the 550 new doctoral recipients who responded to this question. The median age of new doctoral recipients was 30 years, while the mean age was 32 years. The first and third quartiles were 28 and 31 years, respectively. This distribution is consistent with those of the recent past.

Previous Annual Survey Reports

The 2008 First Report was published in the Notices in the February 2009 issue. For the last full year of reports, the 2007 First, Second, and Third Reports were published in the Notices in the February, August, and December 2008 issues respectively. These reports and earlier reports, as well as a wealth of other information from these surveys, are available on the AMS website at www.ams.org/employment/surveyreports.html.

Starting Salary Survey of the 2007–2008 Doctoral Recipients

The starting salary figures for 2008 were compiled from information gathered on the EENDR questionnaires sent to individuals who received doctoral degrees in the mathematical sciences during the 2007–2008 academic year from universities in the United States (see previous section for more details).

The questionnaires were distributed to 1,235 recipients of degrees using addresses provided by the departments granting the degrees; 557 individuals responded between late October and April. Responses with insufficient data or from individuals who indicated they had part-time or non-U.S. employment were excluded. Numbers of usable responses for each salary category are reported in the following tables.

Readers should be warned that the data in this report are obtained from a self-selected sample, and inferences from them may not be representative of the population.

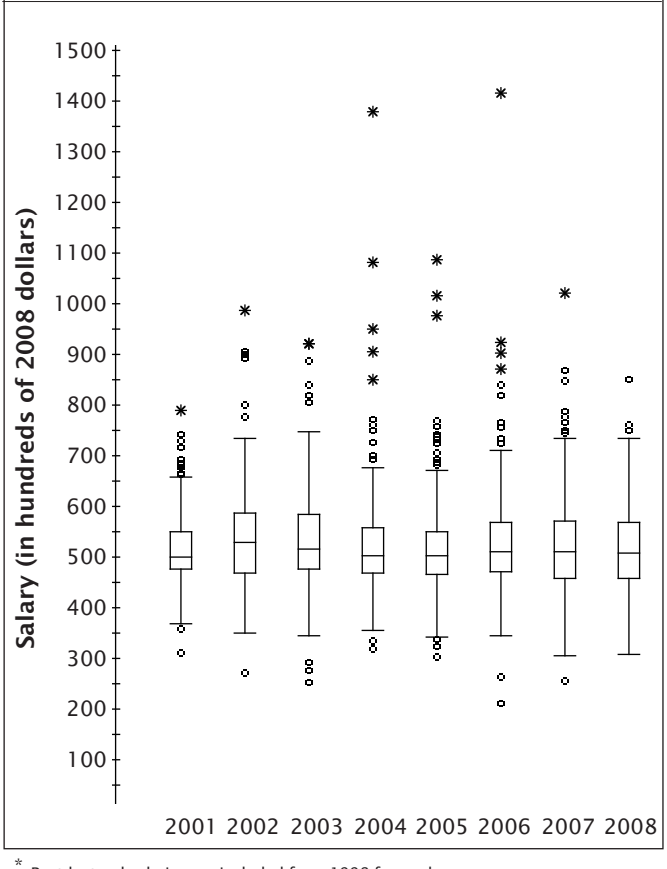
Key to Tables and Graphs. Salaries are those reported for the fall immediately following the survey cycle. Years listed denote the survey cycle in which the doctorate was received—for example, survey cycle July 1, 2007–June 30, 2008, is designated as 2008. Salaries reported as 9–10 months exclude stipends for summer grants or summer teaching or the equivalent. M and F are male and female respectively. Male and female figures are not provided when the number of salaries available for analysis in a particular category was five or fewer. All categories of "Teaching/Teaching and Research" and "Research Only" contain those recipients employed at academic institutions only.

Graphs. The graphs show standard boxplots summarizing salary distribution information for the years 2001 through 2008. Values plotted for 2001 through 2007 are converted to 2008 dollars using the implicit price deflator prepared annually by the Bureau of Economic Analysis, U.S. Department of Commerce. These categories are based on work activities reported in EENDR. Salaries of postdoctorates are shown separately. They are also included in other academic categories with matching work activities.

For each boxplot the box shows the first quartile (Q1), the median (M), and the third quartile (Q3). The interquartile range (IQR) is defined as Q3–Q1. Think of constructing invisible fences 1.5 IQR below Q1 and 1.5 IQR above Q3. Whiskers

Academic Teaching/Teaching and Research 9–10-Month Starting Salaries* (in hundreds of dollars)

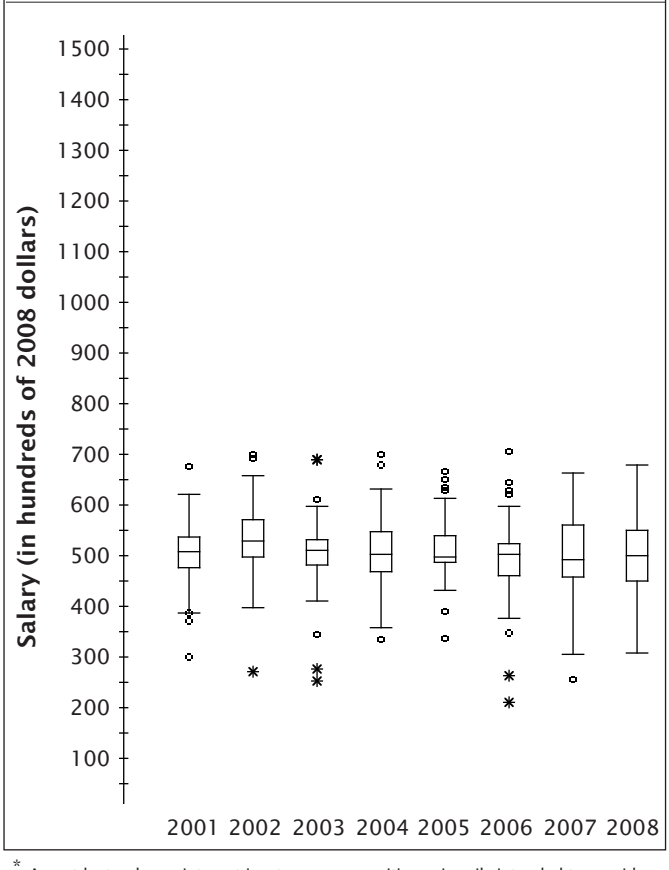
Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 2008 $
1980	105	155	171	185	250	387
1985	170	230	250	270	380	439
1990	230	305	320	350	710	480
1995	220	320	350	382	640	465
1998*	140	340	370	410	700	469
2000	250	380	415	450	650	508
2002	230	400	450	500	840	529
2003	220	415	450	510	920	518
2004	285	420	450	500	1234	503
2005	280	430	465	506	1002	504
2006	200	450	490	550	1350	515
2007	250	450	500	560	1000	511
2008	310	460	510	569	850	510
2004 M	285	420	450	490	850	
2004 F	300	421	450	500	1234	
2005 M	300	430	465	510	710	
2005 F	280	430	467	501	1002	
2006 M	200	450	499	550	880	
2006 F	270	450	480	520	1350	
2007 M	320	450	500	558	1000	
2007 F	250	438	490	560	830	
Total (163 male/79 female)						
2008 M	310	460	515	573	850	
2008 F	380	455	500	550	760	
One year or less experience (138 male/60 female)						
2008 M	316	453	508	570	850	
2008 F	380	458	500	550	680	



* Postdoctoral salaries are included from 1998 forward.

Academic Postdoctorates Only* 9–10-Month Starting Salaries (in hundreds of dollars)

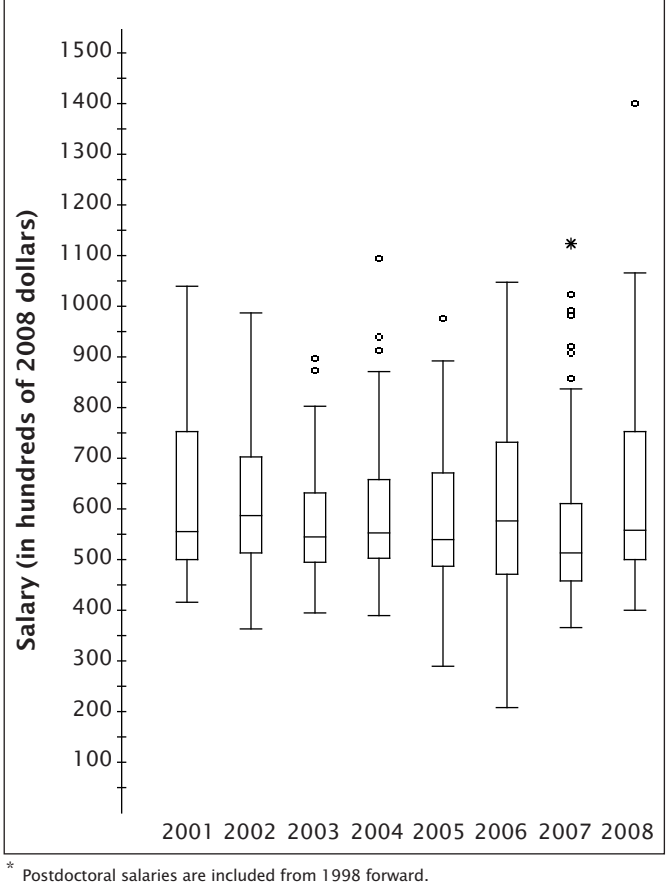
Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 2008 $
1997	180	350	385	410	450	494
1998	290	350	390	420	500	495
1999	130	365	400	418	540	450
2000	300	385	420	450	550	514
2001	250	400	425	450	566	508
2002	230	425	450	487	595	529
2003	240	420	450	480	600	518
2004	300	420	450	490	625	503
2005	310	450	460	500	615	498
2006	200	441	480	500	670	504
2007	250	450	483	550	650	494
2008	310	450	500	550	680	500
2004 M	300	420	450	480	625	
2004 F	400	440	470	500	606	
2005 M	310	450	470	500	615	
2005 F	400	437	450	471	500	
2006 M	200	450	483	523	670	
2006 F	330	413	464	500	590	
2007 M	360	450	490	575	650	
2007 F	250	425	470	515	650	
Total (67 male/18 female)						
2008 M	310	450	500	553	655	
2008 F	400	460	505	542	680	
One year or less experience (64 male/18 female)						
2008 M	354	450	505	555	655	
2008 F	400	460	505	542	680	



* A postdoctoral appointment is a temporary position primarily intended to provide an opportunity to extend graduate training or to further research experience.

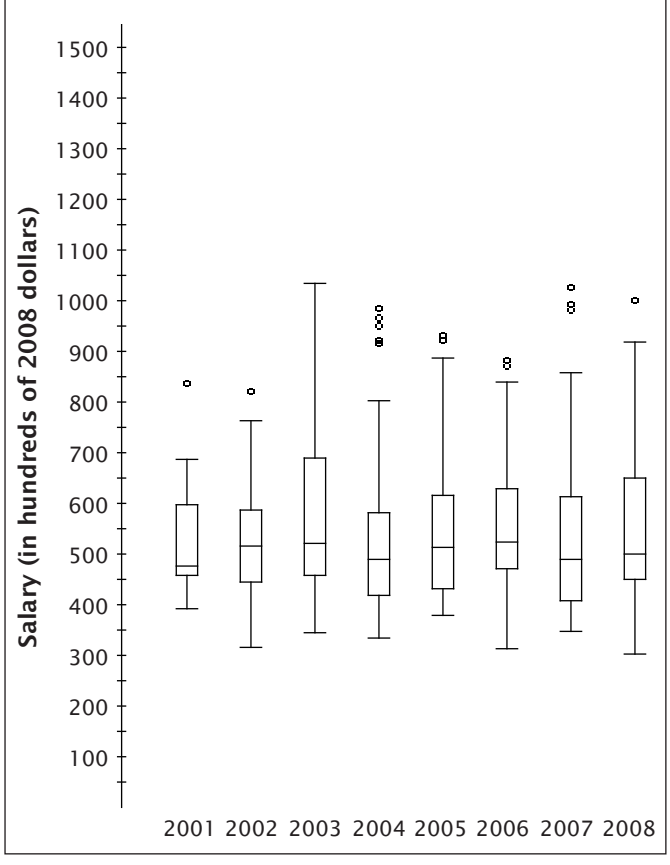
Academic Teaching/Teaching and Research 11–12-Month Starting Salaries* (in hundreds of dollars)

Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 2008 $
1985	220	230	273	300	470	479
1990	225	318	365	404	670	548
1995	300	354	410	478	600	545
1998*	275	405	480	575	700	609
2000	300	400	485	600	1170	594
2002	310	439	500	597	840	587
2003	345	438	475	550	780	546
2004	350	450	495	583	980	554
2005	270	450	500	615	900	542
2006	200	450	550	700	1000	578
2007	340	450	504	600	1100	515
2008	400	500	560	753	1400	560
2004 M	350	448	487	533	980	
2004 F	380	465	545	605	650	
2005 M	270	455	490	549	900	
2005 F	420	450	570	753	824	
2006 M	300	450	535	685	900	
2006 F	200	520	600	850	1000	
2007 M	360	440	500	600	1100	
2007 F	340	480	529	703	1003	
Total (33 male/16 female)						
2008 M	419	530	560	750	1400	
2008 F	400	498	540	757	1067	
One year or less experience (28 male/10 female)						
2008 M	435	523	560	638	985	
2008 F	400	475	500	530	752	



Academic Research Only 11–12-Month Starting Salaries (in hundreds of dollars)

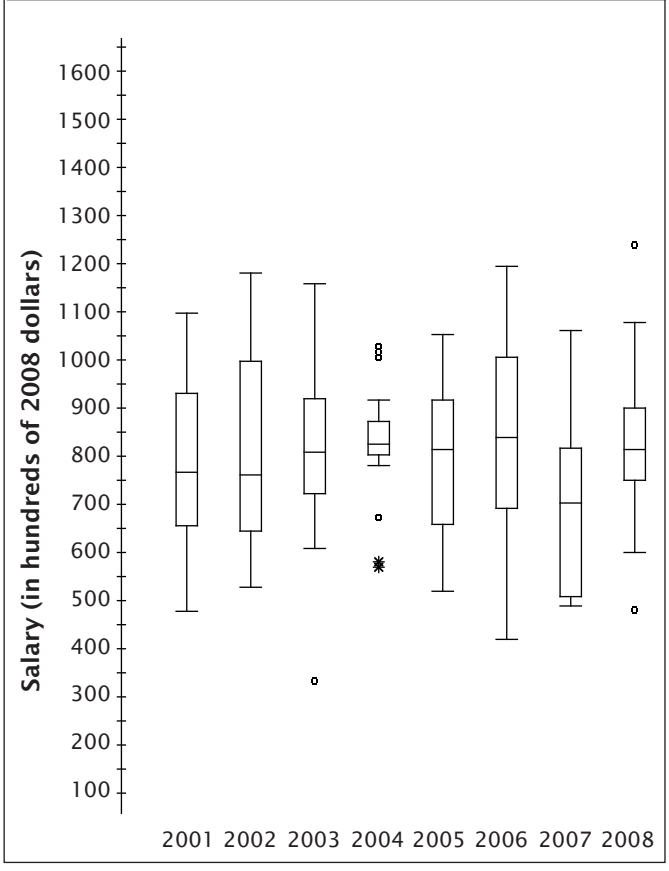
Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 2008 $
1997	190	300	350	400	600	449
1998	200	333	360	428	617	457
1999	270	380	400	480	720	500
2000	300	365	400	529	1000	490
2001	300	350	400	575	796	478
2002	270	380	440	500	700	517
2003	300	405	455	600	900	523
2004	300	378	440	510	880	492
2005	350	400	475	570	860	515
2006	300	450	500	600	840	525
2007	340	415	480	540	1003	491
2008	305	450	500	577	1000	500
2004 M	300	380	440	560	880	
2004 F	350	378	430	493	820	
2005 M	350	420	480	580	860	
2005 F	350	400	475	529	850	
2006 M	350	450	500	600	830	
2006 F	300	455	540	680	840	
2007 M	360	400	470	600	970	
2007 F	340	465	480	504	1003	
Total (29 male/11 female)						
2008 M	305	450	500	550	1000	
2008 F	370	465	500	675	920	
One year or less experience (27 male/8 female)						
2008 M	305	450	500	550	1000	
2008 F	420	478	500	739	920	



* Postdoctoral salaries are included from 1998 forward.

Government
11–12-Month Starting Salaries
(in hundreds of dollars)

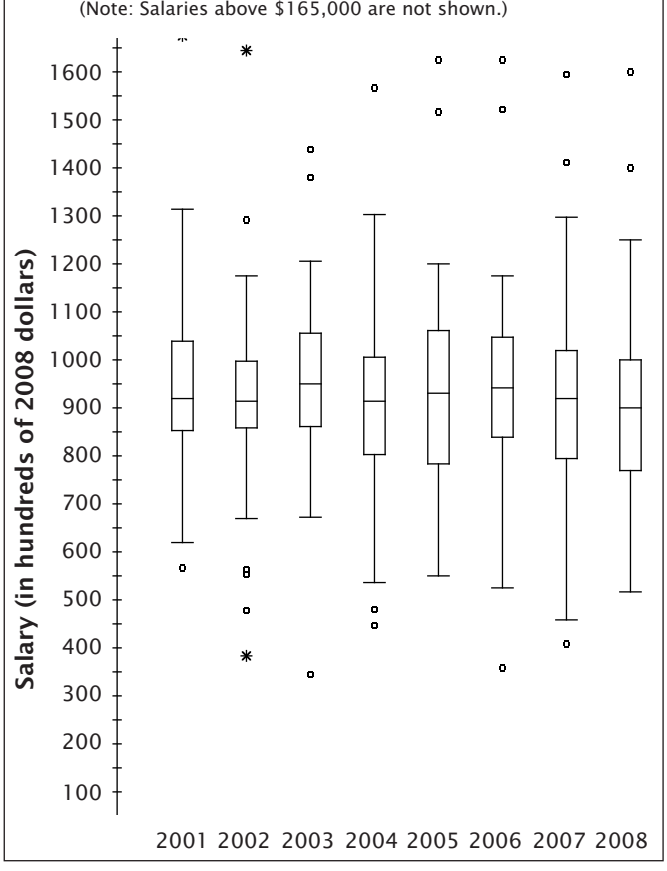
Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 2008 $
1985	263	294	325	381	440	571
1990	320	345	378	430	587	567
1995	370	440	494	507	650	657
2000	440	540	600	640	830	734
2001	400	580	644	758	920	770
2002	450	551	650	775	1005	764
2003	290	668	705	763	1008	811
2004	510	720	738	780	920	825
2005	480	610	752	848	972	815
2006	400	678	800	961	1140	840
2007	480	500	690	800	1040	706
2008	480	750	815	900	1240	815
2004 M	520	700	730	740	910	
2004 F	510	733	749	790	920	
2005 M	500	668	790	902	955	
2005 F	480	540	750	770	972	
2006 M	500	660	800	960	1000	
2006 F	400	775	790	1043	1140	
2007 M	480	500	695	813	1040	
2007 F	To few women to report separately.					
Total (9 male/12 female)						
2008 M	600	790	830	982	1240	
2008 F	480	720	810	863	930	
One year or less experience (7 male/9 female)						
2008 M	600	784	810	921	1080	
2008 F	700	720	837	900	930	



Business and Industry
11–12-Month Starting Salaries
(in hundreds of dollars)

Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 2008 $
1985	260	360	400	420	493	702
1990	320	438	495	533	700	743
1995	288	480	568	690	1250	755
2000	200	640	720	800	1500	881
2001	475	716	770	865	1850	920
2002	325	734	780	850	1400	916
2003	300	700	800	900	1250	920
2004	400	728	817	900	1800	914
2005	510	755	870	978	2000	942
2006	340	800	900	1000	1550	945
2007	400	780	900	1000	2500	921
2008	518	780	900	1000	1700	900
2004 M	400	710	813	900	1800	
2004 F	480	789	850	900	1100	
2005 M	510	760	930	1005	2000	
2005 F	600	745	860	890	1100	
2006 M	340	750	890	1000	1450	
2006 F	500	850	900	960	1550	
2007 M	400	760	920	1000	2500	
2007 F	710	800	855	950	1270	
Total (56 male/19 female)						
2008 M	518	768	910	1013	1700	
2008 F	700	800	900	955	1250	
One year or less experience (40 male/14 female)						
2008 M	518	768	900	1000	1600	
2008 F	700	800	900	958	1250	

(Note: Salaries above $165,000 are not shown.)



Definitions of the Groups

As has been the case for a number of years, much of the data in these reports is presented for departments divided into groups according to several characteristics, the principal one being the highest degree offered in the mathematical sciences. Doctoral-granting departments of mathematics are further subdivided according to their ranking of "scholarly quality of program faculty" as reported in the 1995 publication *Research-Doctorate Programs in the United States: Continuity and Change*.[1] These rankings update those reported in a previous study published in 1982.[2] Consequently, the departments which now comprise Groups I, II, and III differ significantly from those used prior to the 1996 survey.

The subdivision of the Group I institutions into Group I Public and Group I Private was new for the 1996 survey. With the increase in number of the Group I departments from 39 to 48, the Data Committee judged that a further subdivision of public and private would provide more meaningful reporting of the data for these departments.

Brief descriptions of the groupings are as follows:

Group I is composed of 48 doctoral-granting departments with scores in the 3.00–5.00 range. Group I Public and Group I Private are Group I doctoral-granting departments at public institutions and private institutions respectively.

Group II is composed of 56 doctoral-granting departments with scores in the 2.00–2.99 range.

Group III contains the remaining U.S. doctoral-granting departments, including a number of departments not included in the 1995 ranking of program faculty.

Group IV contains U.S. doctoral-granting departments (or programs) of statistics, biostatistics, and biometrics reporting a doctoral program.

Group V contains U.S. doctoral-granting departments (or programs) of applied mathematics/applied science, operations research, and management science.

Group Va is applied mathematics/applied science doctoral-granting departments; Group Vb, which is no longer surveyed as of 1998–99, was operations research and management science.

Group M or Masters contains U.S. departments granting a master's degree as the highest graduate degree.

Group B or Bachelors contains U.S. departments granting a baccalaureate degree only.

Listings of the actual departments which comprise these groups are available on the AMS website at `www.ams.org/outreach`.

[1] Research-Doctorate Programs in the United States: Continuity and Change, *edited by Marvin L. Goldberger, Brendan A. Maher, and Pamela Ebert Flattau, National Academy Press, Washington, DC, 1995.*

[2] *These findings were published in* An Assessment of Research-Doctorate Programs in the United States: Mathematical and Physical Sciences, *edited by Lyle V. Jones, Gardner Lindzey, and Porter E. Coggeshall, National Academy Press, Washington, DC, 1982. The information on mathematics, statistics, and computer science was presented in digest form in the April 1983 issue of the* Notices, *pages 257–67, and an analysis of the classifications was given in the June 1983* Notices, *pages 392–3.*

are drawn from Q3 to the largest observation that falls below the upper invisible fence and from Q1 to the smallest observation that falls above the lower invisible fence. Think of constructing two more invisible fences, each falling 1.5 IQR above or below the existing invisible fences. Any observation that falls between the fences on each end of the boxplots is called an outlier and is plotted as ° in the boxplots. Any observation that falls outside of both fences either above or below the box in the boxplot is called an extreme outlier and is marked as in the boxplot.

Acknowledgments

The Annual Survey attempts to provide an accurate appraisal and analysis of various aspects of the academic mathematical sciences scene for the use and benefit of the community and for filling the information needs of the professional organizations. Every year, college and university departments in the United States are invited to respond. The Annual Survey relies heavily on the conscientious efforts of the dedicated staff members of these departments for the quality of its information. On behalf of the Data Committee and the Annual Survey Staff, we thank the many secretarial and administrative staff members in the mathematical sciences departments for their cooperation and assistance in responding to the survey questionnaires.

Other Data Sources

American Association of University Professors, Financial *Inequality in Higher Education: The Annual Report on the Economic Status of the Profession 2007–2008*, Academe: Bull. AAUP (March/April 2008), Washington, DC.

American Statistical Association, *2008–2009 Salaries of Academic Statisticians*. (Published in *AMSTATNEWS*, December 2008, Issue #378.)

_____, *Salary Survey Results of Biostatistics and other Biomedical Statistics Departments and Units*, AmStat News (January 2009, Issue #379), Alexandria, VA.

Commission on Professionals in Science and Technology, *Professional Women and Minorities,* 17th ed., CPST, Washington, DC, 2008.

_____, *Salaries of Scientists, Engineers, and Technicians: A Summary of Salary Surveys*, 22nd ed., CPST (November 2007), Washington, DC.

Conference Board of the Mathematical Sciences, *Statistical Abstract of Undergraduate Programs in the Mathematical Sciences in the United States: Fall 2005 CBMS Survey*, American Mathematical Society, Providence, RI, 2007.

_____, *Statistical Abstract of Undergraduate Programs in the Mathematical Sciences in the United States: Fall 2000 CBMS Survey*, American Mathematical Society, Providence, RI, 2002.

National Opinion Research Center, *Doctorate Recipients from United States Universities: Summary Report 2006*, Survey of Earned Doctorates, Chicago, IL, 2007. (`http://www.norc.org/SED`)

National Research Council, *Gender Differences at Critical Transitions in the Careers of Science, Engineering and Mathematics Faculty*, National Academy Press, Washington, DC, 2009.

_____ , *Policy Implications of International Graduate Students and Postdoctoral Scholars in the United States*, National Academy Press, Washington, DC, 2005.

_____, *Strengthening the Linkages between the Sciences and the Mathematical Sciences*, National Academy Press, Washington, DC, 2000.

_____, *U.S. Research Institutes in the Mathematical Sciences: Assessment and Perspectives*, National Academy Press, Washington, DC, 1999.

National Science Board, *Science and Engineering Indicators—2008*. Two Volumes (NSB 08-01; NSB 08-1A), National Science Foundation, Arlington, VA, 2008.

National Science Foundation, *U.S. Doctorates in the 20th Century*, (NSF 06-319), Arlington, VA, 2006.

_____, *Graduate Students and Postdoctorates in Science and Engineering: Fall 2006* (NSF 08-306), Arlington, VA, 2008. (http://www.nsf.gov/statistics/nsf08306)

_____, *Science and Engineering Degrees: 1966–2006* (NSF 08-321), Detailed Statistical Tables, Arlington, VA, 2008. (http://www.nsf.gov/statistics/nsf08321)

_____, *Science and Engineering Degrees, by Race/Ethnicity of Recipients: 1995–2004* (NSF 07-308), Detailed Statistical Tables, Arlington, VA, 2007.

_____, *Science and Engineering Doctorate Awards: 2006* (NSF 09-311), Detailed Statistical Tables, Arlington, VA, 2006. (http://www.nsf.gov/statistics/nsf09311)

_____, *Women, Minorities, and Persons with Disabilities in Science and Engineering: 2009* (NSF 09-305), Arlington, VA. (http://www.nsf.gov/statistics/wmpd)

Doctoral Degrees Conferred 2007–2008

Supplementary List

The following list supplements the list of thesis titles published in the February 2009 *Notices*, pages 281–301.

ALABAMA

University of Alabama at Birmingham (3)

BIOSTATISTICS

Ayanlowo, Ayanbola, Design of Phase II & III clinical trials.

Jones, Tamekia, A statistical approach identifying and limiting the effect of influential observations.

Sawrie, David, Preemptive power for the consulting statistician: novel application of internal pilot design and information based monitoring systems.

CALIFORNIA

Naval Postgraduate School (1)

APPLIED MATHEMATICS

Phillips, Donovan, Mathematical modeling and optimal control of battlefield information flow.

University of California, Berkeley (24)

MATHEMATICS

Al-Aidroos, Jameel, Perfect pairings in the tautological rings of the moduli spaces of stable curves.

Berg, Jennifer Danae, On the center of the lie superalgebra $q(n)^{(2)}$.

Burstein, Richard David, Hadamard subfactors of Bisch-Haagerup type.

Chen, Tianbing, Piecewise polynomial discretization and Krylov-accelerated multigrid for elliptic interface problems.

Clayton, Aubrey, Mutation-selection balance for polynomial selection costs and matrix-valued orthogonal polynomial.

Closson, Erik, The solovay sequence in derived models associated to mice.

Courtney, Dennis, Asymptotic lifts of UCP semigroups.

Dan-Cohen, Elizabeth, Structure of root-reductive lie algebras.

Fern, Jesse, Calculations of quantum error correction and fault tolerance thresholds.

Freeman, David Stephen, Constructing Abelian varieties for pairing-based cryptography.

Gray, Aaron, Functoriality of the logarithmic Riemann-Hilbert.

Han, Fei, Supersymmetric QFTS, super loop spaces and Bismut-Chern character.

Huggins, Peter, Polytopes in computational biology.

Jetchev, Dimitar, CM points, selmer groups, component groups and Euler systems.

Kirkpatrick, Kay, Rigorous derivation of the Landau equation in the weak coupling limit.

Lebow, Eli, Embedded contact homology of 2-torus bundles over the circle.

Levine, Lionel, Limit theorems for internal aggregation models.

Mihaescu, Radu, Distance methods in phylogeny.

Morton, Jason, Geometry of conditional independence.

Nachmias, Asaf, Percolation on finite groups.

Schlutenberg, Farmer, Measures in mice.

Tingley, Peter, Some results on the crystal commutor and affine sl(n) crystals.

Yao, Jiangang, Codimension one embedding of manifolds.

Zywina, David, The large sieve and Galois representations.

University of California, Riverside (4)

MATHEMATICS

McLoughlin, Peter, When is the adjoint of a finite-rank minimal projection also minimal.

Troutman, Tiffany, Infinity-harmonic functions, maps and morphisms of Riemannian manifolds.

Wrkich, James, Solvability of some inhomogeneous parabolic.

Yao, Chui Zhi, Discrete logarithm and related problems in cryptography.

University of California, Santa Barbara (10)

MATHEMATICS

Barbaro, Alethea, An interacting particle model for the migrations of pelagic fish.

Haynal, Heidi, PI degree parity in q-skew polynomial rings.

Kolpas, Allison, Coarse-grained analysis of collective motion in animal groups.

Learned, John, Graphical methods in representation theory.

Levitt, Rena, Biautomaticity and nonpositively curved spaces.

Macauley, Matthew, Coexter theory and discrete dynamical systems.

Rehkopf, Edward, Reduction of quadratic forms over polynomial rings.

Sentinella, Robert, Multi-scale modeling of liquid crystalline polymers.

Trethewey, Peterson, Conformal curvature and one-relator group theory.

Wiley, Chad, Nugatory crossings in closed 3-braid diagrams.

COLORADO

University of Colorado, Boulder (10)

APPLIED MATHEMATICS

Kurcz, Christopher, Fast convolutions with Helmholtz Green's functions and radially symmetric band-limited kernels.

Lim, Jisun, The qualitative study of a chemical reaction diffusion system and some integral equations.

Mao, Wenjin, Dimension jumping and auxiliary variable techniques for Markov chain Monte Carlo algorithms.

Nolting, Joshua, Efficiency-based local adaptive refinement for FOSLS finite elements.

Pietarila-Graham, Jonathan, Regularizations as subgrid models for turbulent flows.

Piret, Cecile, Analytical and numerical advances in radial basis functions.

Rojsiraphisal, Thaned, A study of the variability of the North Indian ocean.

Wang, Jian, Recovering Bayesian networks with applications to gene regulary networks.

Watson, Michael, A study of rotationally constrained convection in tall annular geometries.

Zuev, Julia, Recent advances in numerical PDEs.

University of Denver (1)

MATHEMATICS

Nagrath, Aditya, Properties of scattered lattices, and the introduction of a meet semilattice duality.

CONNECTICUT

Wesleyan University (1)

MATHEMATICS AND COMPUTER SCIENCE

Babichev, Andrey, Speedups of ergodic group extensions.

Yale University (4)

MATHEMATICS

Liu, Qihou, On the colored Jones polynomials of certain links.

Maitra, Rachel, Mathematically rigorous quantum field theories with a non-linear normal ordering of the Hamiltonian operator.

Patnaik, Manish, Geometry of loop Einstein series.

Zhu, Minxian, Vertex operator algebras arising from affine lie algebras.

IDAHO

Idaho State University (1)

MATHEMATICS

Lundeen, Suzanne, The finite reflection group H_4.

ILLINOIS

Illinois State University (5)

MATHEMATICS

Hofbauer, Pamela, Characterizing high school students' understanding of the purpose of graphical representations.

Knapp, Andrea, Prompting mathematics teacher development through dynamic discourse.

Naresh, Nirmala, Workplace mathematics of the bus conductors in Chennai, India.

Simmons, Eugene, The effects of using a QAR reading strategy to improve students' conceptual understanding.

Thompson, Kevin, Students' understanding of trigonometry enhanced through the use of a real word problem: improving the instructional sequence.

KENTUCKY

University of Kentucky (5)

STATISTICS

Hersh, Matt, Indentification of multiple functional peaks resulting from a common peak shape function.

Li, Hao, Identifying gene expression patterns in oligonucleotide microarray experiments.

McClintock, Scott, Stochastic securities market model with no short selling.

Vandyke, Rhonda, Classification of self-modeling regressions.

Zhu, Hua, Smoothed empirical likelihood for quantiles and some variations/extention of empirical likelihood for Buckley-James estimator.

MARYLAND

John Hopkins University (1)

APPLIED MATHEMATICS AND STATISTICS

Tan, Liang, Numerical methods for multi-dimensional American options.

University of Maryland (23)

APPLIED MATHEMATICS AND COMPUTER SCIENCE

Bard, George, Algorithms for solving linear and polynomial systems over finite fields with applications to cryptoanalysis.

Chakraborty, Purnendu, Molecular dynamic studies of organic coated nano aerosols.

Cheng, Bin, On the rotational shallow water and Euler equations.

Finkbiner, Amy, Global phenomena from local rules: Peer-to-peer networks and discrete crystal steps.

Ganesh, Nadarajasundaram, Small area estimation and prediction problems.

Heath, Jeffery, Global optimization of finite mixture models.

Johnson, Hunter, Definable families of finite VC dimension.

Li, Huilin, Small area estimation: an empirical best linear unbiased prediction approach.

Long, Nicholas, Involutions of shift of finite type: fixed point shifts, orbit quotients, and the dimension representation.

Lu, Guanhua, Asymptotic theory in multiple-sample semiparametric density ratio models and its applications to mortality forecasting.

Mai, Yabing, Comparing survival distributions in the presence of dependent censoring: asymptotic validity and bias corrections of the Logrank test.

Min, Min, Asymptotic normality in generalized linear mixed models.

O'Hara, Michael, Adiabatic quantum computation: noise in the adiabatic theorem and using the Jordan-Wigner transform to find effective Hamiltonians.

Oktay, Onur, Frame quantization theory and equiangular tight frames.

Smetaniouk, Taras, Pricing variance derivatives using hybrid models with stochastic interest rates.

Tate, Calandra, An investigation of the relationship between automated machine evaluation metrics and user performance on an information extraction task.

Truman, Kathryn, Analysis and extension of non-communative NTRU.

Wei, Dongming, Critical thresholds in Eulerian dynamics.

Wen, Shihua, Semi-paramatric cluster detection.

Widemann, David, Dimensionality reduction for hyperspectral data.

Yu, Tinghui, Estimation theory of a location parameter in small samples.

Zhang, Chensong, Adaptive finite element methods for variational inequalities: theory and applications in finance.

Zhong, Weigang, Entropy stable approximations of nonlinear conservation laws and related fluid equations.

MASSACHUSETTS

Harvard University (1)

MATHEMATICS

Paur, Katherine, Modeling the effects of population structure and vaccination strategy on infectious diseases.

MINNESOTA

University of Minnesota (13)

SCHOOL OF MATHEMATICS

Bemis, Christopher, Modeling and optimization of mortgage loan portfolios.

Chen, Yanlai, An adaptive high order discontinuous Galerkin method with error control for the Hamilton-Jacobi equations.

Chung, Kuerak, Based Cacti.

Jung, Yoon Mo, Variational modeling, analysis, and computing of image and visual segmentation problems.

Kim, Sangwook, Topology of diagonal arrangements and flag enumerations of matroid base polytopes.

Kontovourkis, Michalis, On elliptic equations with low-regularity divergence-free drift terms and the steady-state Navier-Stokes equation in higher dimenions.

Kurkcu, Harun, High-frequency scattering by infinite rough surfaces.

Mahajan, Deepa, Boundary-conforming discontinuous Galerkin methods via extension form subdomains.

Maxwell, Molly, Enumerating self-dual spanning trees and self-dual matroid bases.

Phan, Tuoc Van, On global existence of solutions to a cross-diffusion system.

Weimerskirch, Michael, On infinite indistinguishability quotient monoids in misere impartial combinatorial games.

Zhang, Hang, Static and dynamical problems of hydrogel swelling: modeling and analysis.

Zuniga, Jose Javier, Compactifications of moduli spaces.

NEW HAMPSHIRE

Dartmouth College (6)

MATHEMATICS

Andersen, Brooke, Distinguishing complete sets with respect to strong notions of reducibility.

Bayless, Jonathan, Carmichael's conjecture and the unit group function.

Bourke, John, Results of off-branch numbers.

Henrich, Allison, A sequence of degree one Vassiliev invariants for virtual knots.

Malandro, Martin, Fast Fourier transforms for inverse semigroups.

Pollack, Paul, Prime numbers and prime polynomials.

NEW JERSEY

Rutgers University - Newark (2)

MATHEMATICS AND COMPUTER SCIENCE

McDonald, Keith Tim, On *p*-adic zeta functions and their derivatives at *s*=0.

Min, Honglin, Hyperbolic graphs of surface groups.

Rutgers The State University of New Jersey (11)

MATHEMATICS

Bao, ShiTing, Gradient estimates for the conductivity problems.

Coskey, Samuel, Descriptive aspects of torsion-free abelian groups.

Costello, Kevin, Ranks of random matrices and graphs.

Duffy, Colleen, Graded traces and irreducible representations of Aut (A(Gamma)) acting on graded A(Gamma) and A(Gamma) dual.

Guo, Ren, Parameterizations of Teichmüller spaces of surfaces with boundary.

Hansen, Derek, Asymptotic perturbation formulas for the effect of scattering by small objects: an analysis over a broad band of frequencies.

Kennedy, Benjamin, Differential delay equations with several fixed delays.

Lins, Brian, Asymptotic behavior and Denjoywolff theorems for Hilbert metric nonexpansive maps.

Pudwell, Lara, Enumerative schemes for pattern - avoiding words and permutations.

Speck, Jared, On the questions of local and global existence for the hyperbolic PDEs occuring in some relativistic theories of gravity and electromagnetism.

Stucchio, Christopher, Selected problems in quantum mechanics.

NEW YORK

Columbia University (3)

BIOSTATISTICS

Chang, Chung, Statistical analysis for neuroimaging data.

Xu, Qiang, Existing approaches and a new weighted method for cox regression in the presence of missing covariates.

Zhang, Hui, Handling missing data without specifying auxiliary models.

PENNSYLVANNIA

University of Pennsylvania (2)

STATISTICS

Ghia, Kartikeya, Statistical applications in finance: permutation tests, regression trees, and normality tests.

Shirley, Kenneth, Hidden Markov models for alcoholism treatment trial data.

University of Pittsburgh (3)

STATISTICS

Iosif, Ana-Maria, Analysis of longitudinal random length data.

Lopez, Adriana, Markov models for longitudinal course of youth bipolar disorder.

Wu, Qiang, Clustering methodologies with applications to integrative analyses of post-mortem tissue studies in schizophrenia.

UTAH

Utah State University (1)

MATHEMATICS AND STATISTICS

Cook, Lawrence, Small sample methods for the analysis of clustered binary data.